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each of the service entries; plural policy rule format entries
dangling below the policy sub-tree; and plural service class
definition entry dangling below the system sub-tree; each of
the plural service entries including as an attribute a condition
parameter which is referred to from each policy rule entry via
each policy rule format entry;

each of the plural service entries including as an attribute
an action parameter which is referred to from each policy rule
entry via each policy rule format entry and via each service
class definition entry.

Moreover, in the computer readable recording medium according
to the present invention, plural service entries further
includes as an attribute a service type specifying a band and
a packet transfer priority, the service type being the name
of a specific one of the service class definition entries.

Moreover, in the computer readable recording medium according
to the present invention, each of plural service entries further
includes as an attribute a rule creation state indicating whether
or not a policy rule entry is created below each service entry
itself.

Moreover, in the computer readable recording medium according
to the present invention, each of plural service entries further
includes as an attribute a provisioning date/unprovisioning
date which controls a policy setting/releasing operation from
a policy management system.

Moreover, in the computer readable recording medium according to the present invention, each of plural service class definition entries further includes as an attribute a parameter representing a feature of a service corresponding to a service type and a pointer to a policy rule format entry to be applied to the service.

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An IP network service management system consists of a service oriented DIT construction for an IP service management according to the present invention, a design system (a system for designing a routing table to be stored in a router), a customer care system (a system of supporting a service acceptance to a customer and managing customer information), a policy management system (a system for managing a router according to a policy defined in a customer unit or in a service unit required by a customer), and a directory server (a server for unitarily managing data). Policy related data sets to be used by the policy management system are summarized to the service entry (stored in a directory server and including service information required by a customer) created by the customer care system. The policy related data can be acquired by referring to the service entry. This feature allows the data capacity to be saved. Moreover, the policy rule format entry 14 (Fig. 4) is used to interpret the content of the service entry as a policy rule (defined in a customer unit or service unit and described using condition and action and set to a router). This feature allows the rule to be changed flexibly. Moreover, introducing the service class definition entry 18 (Fig. 3) enables flexibly dealing with a change of service (provided to a customer). That is, when an addition or change of a service type occurs, it is not needed to change the original data (service information accepted from a customer).

BRIEF DESCRIPTION OF THE DRAWINGS

This and other objects, features and advantages of the present invention will become more apparent upon a reading of the following detailed description and drawings, in which:

Fig. 1 is a diagram illustrating a service-oriented DIT construction for an IP service management, according to an embodiment of the present invention;

Fig. 2 is a list of attributes included in a service entry according to the present invention;

Fig. 3 is a list of attributes included in a service class definition entry according to the present invention;

Fig. 4 is a list of attributes included in a policy rule format entry according to the present invention; and

Fig. 5 is a list of attributes included in a policy rule entry according to the present invention.

DESCRIPTION OF THE EMBODIMENTS

Fig. 1 depicts a DIT (Directory Information Tree) construction according to an embodiment of the present invention. The DIT construction is recorded on the recording medium such as a hard disk drive of a directory server, together with data stored in the directory server, and implements the schema definition of these sets of data. The carrier possesses the directory server, together with the system such as a design system and a policy

the service entry 15 below the customers sub-tree 11. The policies sub-tree 13 holds the policy rule format entry 17 only.

The system sub-tree 14 is a sub-tree which is neutral to the customers sub-tree 11, the network sub-tree 12, and the policies sub-tree 13. In other words, the system sub-tree is the sub-tree which stores information which cannot be classified into only the customers sub-tree 11, the network sub-tree 12, and the policies sub-tree 13 but are related to all sub-trees. The system sub-tree 14 has the service class definition entry 18 below it.

Fig. 2 is a list showing attributes possessed by the service entry 15. The service type 21 specifies a band and a packet transfer priority. The name of one of plural service class definition entries 18 (Fig. 3) is used as an attribute value (shown with the arrow extending from the service entry 15 to the service class definition entry 18 in Fig. 1). The parameter 22 is the condition parameter having the possibility that it may be used as the condition of the policy entry 16. That is, the condition parameter 22 is referred to according to the type of policy entry, based on the attribute value of the condition parameter 41 existing in the policy rule format 17 (Fig. 4) corresponding to the policy rule entry. When attention is paid to a certain policy rule entry 16 (Fig. 5), the policy rule entry 16 can refer to an attribute within the service entry 15 because it has the attribute "policy rule format". In this

operation, the policy rule entry 16 refers to the policy rule format 17 corresponding to the policy rule entry 16 distinguished by referring to the attribute "policy rule format" (as shown with the arrow extending from the policy rule format 16 to the policy rule format entry 17) and then refers to the attribute value of the condition parameter 41 possessed by the policy rule format 17 is referred. This reference method allows the data capacity to be saved.

Numeral 23 represents part of the action parameter of a policy rule. There is as another action parameter PHB (per Hop Behavior) possessed by the service class definition entry. These parameters are related to each other as follows:

In the operation procedure, it is assumed that a service entry is first created and that a policy rule entry is next created and that the content of the policy rule is finally set to a router.

First, the service class definition entry is retrieved based on the service type information held by the service entry. The service class definition entry has PHB to its service class and a policy rule format entry. Next, a policy rule entry is created according to the policy rule format.

The policy rule entry, which has policy rule format information, can retrieve the action parameter 23 with PHB and Service ID as an action parameter, based on the service type information possessed by the policy rule format.

The ruleCreationState (rule creation state) 24 is the attribute for representing whether or not the policy rule entry 16 (Fig. 15) that the policy management system uses to set a policy to the router has been created, based on the service entry 15 (Fig. 2). Plural policy rule entries 16 are created in a batch mode to one service entry 15. As to the service entry in which RuleCreationState 24 has a value of "non-creation", the policy management system creates the policy rule entry 16 (Fig. 5) below the service entry 15, based on the service entry 15 (Fig. 2) and the service format entry policy 17 (Fig. 4).

Numeral 26 represents the service entry, that is, the entry obtained by setting an object NE (network element corresponding to a router) when a policy rule entry created from the service entry is set.

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The operation of the recording medium according to the present invention will be described below referring to Figs. 1 to 5.

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